Detection of DNA Hybridization at the Single-Molecule Level

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NSF NSEC Grant PHY-0425897

- Coupled-resonator AFM images of self-assembled DNA oligo-nucleotides on Au. Scan areas are 1 um by 1um. Signal levels recorded on a section of the images are given to the right.
- The three samples are prepared by immobilizing a mixture of 20 nucleotide long single and double stranded DNA molecules with the following percentages of double stranded molecules: 0 % in (a), 1 % in (b), and 100% in (c).
- The signal levels show that single stranded molecules result in a signal level of 0.9 mV and double stranded molecules result in 0.45 mV.
- The widths of the features in (b) suggest that these belong to individual hybridized DNA molecules, since our tips are typically 20-50 nm wide.